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SHELLS OF TENNESSEE. (No. 2.)

BY JAMES LEWIS, M.D.

SINCE the publication of my papers on the Shells of the Holston River, and on the Land Shells of Tennessee,[1] a few supplementary species have come to my notice, and conclusions have been reached respecting some of the operculate univalves that occur in the small streams and springs of Knox, Blount, Monroe, and adjoining counties in Tennessee. In this paper conclusions are presented as to what seem to be, with only one or two exceptions, known species. For the identification of species and varieties in several instances thanks are due to Mr. Lea, Mr. Wheatley, Dr. Hartman, and others. Too much credit cannot be awarded to the enterprise and interest with which Miss Law has extended her explorations.

UNIONIDÆ.

Unio argenteus, Lea.

Conasauga Creek.

Unio Cumberlandianus, Lea.

Conasauga Creek and other streams. Scarce.

Unio Conradicus, Lea.

Conasauga Creek.

Unio Jonesii, Lea.

Conasauga Creek. A single specimen.

Unio pilaris, Lea.

Holston and Clinch Rivers.

Unio Pybasii, Lea.

Various creeks and streams. Somewhat common.

Unio sparus, Lea.

Various creeks and streams. Scarce.

Unio tumescens, Lea.

Holston and Clinch Rivers. Not abundant.

Margaritana minor, Lea.

Conasauga Creek. Not abundant.

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[1] American Journal of Conchology.

Anodonta edentula, Say.

Holston River. Scarce.

CORBICULADÆ.

Sphærium fabale, Prime.

Turkey Creek, near Concord. Scarce.

Sphœrium occidentale, Prime.

Lyon's Bend, Knox County.

Pisidium abditum, Haldeman.

Pond Spring, Monroe County; Haskell's Spring, Knox County.

Pisidium compressum, Prime.

Pond Spring. Rare.

Pisidium virginicum, Bgt.

Turkey Creek, a few large single valves; Tellico River, more abundant, not large.

AQUATIC PULMONATES.

Lymnæa columella, Say.

Sinking Creek. Abundant.

Lymnæa desidiosa, Say.

Pond Spring. Abundant. Other localities, a few.

Lymnæa humilis? Say.

A single specimen was taken alive from a rock high up on a bluff facing the Tennessee River in Roane County. It may have strayed from a little spring of water trickling down the cliff a few feet away.

Physa heterostropha, Say.

Specimens are usually found in the various parcels of shells taken from small streams and springs.

Physa hypnorum, Drap.

A single specimen. Station unknown.

Planorbis bicarinatus, Say.

A few small specimens from a lagoon near Chilhower Mountain in Blount County. Larger specimens in Tellico River.

Planorbis parvus, Say.

A few dead shells were sent for identification, taken from some spring. Two specimens, evidently alive when taken, have been found among other shells. This class of shells is apparently scarce in the regions explored.

Ancylus Haldemani, Bourgy. ?

Holston River. No specific name was suggested for this shell in my previous paper. It may possibly be *A. obscurus*, Hald.; if so, the two names are probably synonyms.

LAND SHELLS.

Helix arborea, Say.

Blount and Monroe Counties. Very scarce.

Helix clausa, Say.

Blount County. Among forty specimens was one having all the features of *H. Mitchelliana*, Lea.

Helix demissa, Binney.

The typical form is scarce. The few I have secured are small and pale. The larger shell of this group, which in my previous paper I treated as a variety of *ligera*, is proportionally a little more elevated and decidedly yellow. Mr. W. G. Binney, I am informed, regards it as a variety of *demissa.* It is apparently as distinct from the typical *demissa* as *sculptilis*, Bland, is from *indentata* Say. This consideration induces me to reclaim for the larger shell the name *acerra*, hesitatingly suggested in my previous paper. I have a single specimen in no respect distinguishable from the typical *demissa* except by two teeth, within, as in *gularis.*

Helix gularis, Say.

In my endeavors to find *young* specimens of this species among the numerous shells sent by Miss Law, I am constrained to regard as such the small depressed shells which in my former paper I referred to *suppressa.* The shells hitherto regarded as *suppressa* differ so essentially from undoubted specimens of that species from Pennsylvania that I cannot unite them. Among the shells of this type from Miss Law appear to be three varieties of *gularis* differing in size, form, and elevation. A fourth form is more polished and subglobose, with the umbilicus entirely closed. It may be hereafter separated as a distinct species.

Helix hirsuta, Say.

A common species accidentally omitted in former papers.

Helix indentata, Say.

Blount, Knox, and Monroe Counties. Very rare.

Helix inflecta, Say.

A common species accidentally omitted in previous papers.

Helix lasmodon, Phillips.

Besides the usual depressed form, Miss Law reports a single specimen, elevated like some of the varieties of *gularis*.

Helix ligera, Say.

A few well characterized specimens from Monroe County, larger and paler than Ohio shells.

Helix Mitchelliana, Lea.

A single shell. (See *H. clausa.*)

Helix profunda, Say.

A single dead shell found on a bluff in Roane County.

Helix sculptilis, Bland.

Monroe County. Very scarce.

Helicina orbiculata, Say.

Byrd's Bluff, Roane County. Somewhat abundant.

Succina avara, Say.

Single specimen only. Monroe County.

OPERCULATED AQUATIC UNIVALVES.

Trypanostoma aratum? Lea, or **bicinctum,** Tryon.

Holston River. Scarce.

Trypanostoma glandulum, Anth. **Mel. glans,** Anth.

Holston River. This will, I think, prove to be a young *Strephobasis*.

Trypanostoma robustum, Lea.

Holston River.

Trypanostoma Troostii, Lea.

Holston River.

The species that follow are mostly from small streams and springs, to which frequent references will be made; and to save space the various stations are here tabulated, and references made to them (in remarks on species), by numbers.

[Numbers on the right refer to species associated, locally.]

Knox County.

1. Sinking Creek. [6, 8, 10, 12.]
2. Turkey Creek. [7, 8, 9, 11, 12.]
3. Lea's Spring. [6, 8, 10, 12.]
4. Campbell's Station. [7, 8, 9, 11, 12.]

Blount County.

5. Abram's Creek. [2, 11.]
6. Cox's Creek. [8, 11.]
7. Six Mile Creek. [4, 12.]
8. Pistol Creek. [6, 7, 8, 11, 12.]
9. Cox's Spring. [8, 12.]
10. Brook running into Little Tennessee River. [8.]

Monroe County.

11. Bat Creek. [9.]
12. Conasauga Creek. [1.]
13. Fork Creek. [8, 9.]
14. High Falls (Conasauga Creek). [11, 12, 13.]
15. Ghormley's Branch. (Creek.) [9.]
16. Henderson's Branch. [7, 12.]
17. Powdermill Branch. [6, 8.]
18. Brook running into Bat Creek. [4, 7, 8, 9, 12.]
19. Shady Grove. (Brook or creek?) [8, 11.]
20. Tellico River. [1, 3, 14, 15.]
21. Clark's Spring. [8, 12.]
22. Cardin's Spring. [9, 11.]
23. Cannon's Spring, [8.]
24. Carmichael's Spring. [9, 12.]
25. Dougherty's Spring. [8, 11.]
26. Elliott's Spring. [12.]
27. Honeysuckle Spring. [8, 11.]
28. Marshall's Spring. [8.]
29. Pond Spring. [8.]
30. Rausin's Spring. [11.]
31. Rausin's Spring outlet. [11, 12.]
32. Sink Hole Creek. [6, 9.]
33. Williams' Spring. [11.]
34. Wilson's Spring. [8.]
35. Wilson's Spring outlet. [8.]

McMinn County.

36. Athens. [8, 11.]
37. Middle Creek. [8, 12.]

Roane County.

38. Byrd's Bluff. [16.]
39. Bowman's Spring. [11.]
40. Cave Spring. [11.]
41. Periwinkle Branch. [5, 11.]
42. Shanty Branch. [5.]
43. Brown's Spring. [8.]

Rhea County.

44. Piney River. [1, 11.]

Loudon County.

45. Thurston's Creek. [12.]

Trypanostoma Lyonii, Lea.

Localities, 12, 20, 44.

Trypanostoma validum ? Anthony.[1]

Loc. 5.

Trypanostoma fastigiatum ? Anthony.[1]

Loc. 20. The three *supposed* species above named seem to form a natural group with *T. parvum*, Lea, and like that species they are found associated with shells which seem to be a variety of *Anculosa subglobosa*, Say. It is possible some future writer may unite them as one species.

Trypanostoma, (N. S.) Lea.

Localities, 7, 18.

Trypanostoma attenuatum, Lea.

Localities, 41, 32. A variable species, which some of my correspondents call *T. strigosum*, Lea.

Trypanostoma unciale, Hald.

Localities, 1, 3, 5, 8, 17, 32. The species is defined as striate or carinate above. I have separated from it all *plicate-striate* shells that have been referred to this species by my correspondents. The largest shells occur in loc. 8; they are also variable, some of them passing through phases referable to the next species to forms entirely free from striations and carinæ. The most perfect forms occur in loc. 17.

Trypanostoma Estabrookii, Lea.

Localities, 2, 4, 8, 16, 18. The shells of loc. 18 are very fine, perfect, and slender; and have been referred by a correspondent to *T. unciale*. The shells of loc. 16 are small and imperfect.

Goniobasis arachnoidea, Anthony.

Localities, 1, 2, 3, 4, 6, 9, 10, 13, 17, 18, 19, 21, 23, 25, 27, 28, 29, 35, 36, 37, 43. The local varieties are very perplexing, and some of them could not have been identified but for the aid derived from shells of other localities. Some of the various forms have been referred to *Try. unciale;* others to *Gon. baculum;* some of the more slender varieties have been referred to *Gon. carinifera*, Lam. The shells of one locality (23) have been called an undescribed species of *Trypanostoma*. Of two other localities (28, 43) the shells have been supposed to be another undescribed species of *Trypanostoma*. These shells bear a strong resemblance to Mr.

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[1] According to Mr. Wheatley.

Lea's figure of *Melania perstriata*, and I have specimens of loc. 28 that were returned to me as *perstriata.*

Shells of loc. 10 bear a strong resemblance to Mr Lea's figure of *T. Sycamorense*, from which they are (by implication) supposed to be distinct.

Some of the least plicate specimens of loc. 2 are very like Mr. Lea's figure of *Melania oblita*, and, of course, have been referred to *Try. unciale* by my correspondents. I unhesitatingly refer Mr. Anthony's *Mel. baculum* as a synonym to *Gon. arachnoidea; baculum* being the adult form, *arachnoidea* the immature form; *arachnoidea* has priority; but at the same time I think a careful study of the various shells which may yet be identified with *arachnoidea* will result in assigning priority to some other name.

Goniobasis parruta, Lea.

Localities, 2, 4, 11, 13, 15, 18, 22, 24, 32. This is also a variable species. The largest specimens occur in loc. 2; the most perfect shells occur in loc. 18.

Goniobasis acuto-carinata, Lea.

Localities, 1, 3.

Goniobasis aterina, Lea.

Localities, 2, 4, 5, 6, 8, 14, 19, 22, 25, 27, 30, 31, 33, 36, 39, 40, 41, 44. Localities 2, 4, produce remarkably perfect shells which my correspondents have differently named as *graminea*, Hald.; *Saffordii*, Lea, and *aterina*, Lea. Usually this species is much eroded.

Goniobasis castanea, Lea.

Localities, 1, 2, 3, 4, 7, 8, 9, 14, 16, 18, 21, 24, 26, 31, 37, 45. Localities 2, 4 produce shells, the upper whorls of which are smooth; all the other localities produce shells which, when perfect, are slightly but variably carinate above. Some of the varieties have been referred to *Gon. difficilis*, Lea; but as that species is "obsoletely plicate" on the upper whorls, the reference does not seem to have been well considered. Localities 30, 31 produce decallate shells that bear a strong resemblance to figures of *Gon. pulla*, Lea, but possibly not identical. Some of the varieties have been referred to "*Mel. simplex*, Say." I am not able to say the identification is conclusive.

Goniobasis instabilis, Lea.

Locality 14. I have the name from Mr. Lea. The shells are all smooth, which may account for their difficult identification.

Melantho rufus, Hald.

Locality 20. Common.

Melantho decisus, Say.

Locality 20. Less common.

Pomatiopsis lapidaria, Say.

Locality 38. Not abundant.

MOHAWK, N. Y., Jan. 10, 1872.